

What is claimed is:

- 1) A resin comprising the reaction product of either polyamide with cyclic anhydride or polyester with cyclic anhydride, said reaction product also containing an additive.
- 2) The resin of claim 1, wherein said cyclic anhydride is selected from the group of succinic anhydride, substituted succinic anhydride, glutaric anhydride, substituted glutaric anhydride, phthalic anhydride, substituted phthalic anhydride, maleic anhydride, and substituted maleic anhydride.
- 3) The resin of claim 2, wherein said substituted succinic anhydride is selected from the group of methyl succinic anhydride, 2,2-dimethyl succinic anhydride, phenyl succinic anhydride, octadecenyl succinic anhydride, hexadecenyl succinic anhydride, eicosodecenyl succinic anhydride, 2-methylene succinic anhydride, n-octenyl succinic anhydride, nonenyl succinic anhydride, tetrapropenyl succinic anhydride, dodecyl succinic anhydride, and mixtures of these.
- 4) The resin of claim 2, wherein said substituted glutaric anhydride is selected from the group of 3-methyl glutaric anhydride, phenyl glutaric anhydride, diglycolic anhydride, 2-ethyl 3-methyl glutaric anhydride, 3,3- dimethyl glutaric anhydride, 2,2- dimethyl glutaric anhydride, 3,3-tetramethylene glutaric anhydride, and mixtures of these.
- 5) The resin of claim 2, wherein said substituted phthalic anhydride is selected from the group of 4-methyl phthalic anhydride, 4-t-butyl phthalic anhydride, tetrahydrophthalic anhydride, hexahydrophthalic anhydride, and mixtures of these.

- 6) The resin of claim 2, wherein said substituted maleic anhydride is selected from the group of 2-methyl maleic anhydride, 3,4,5,6-tetrahydrophthalic anhydride, 1-cyclopentene-1,2-dicarboxylic anhydride, dimethyl maleic anhydride, diphenyl maleic anhydride, and mixtures of these.
- 7) The resin of claim 1, wherein the amount of said cyclic anhydride is from about 100 to 10,000 ppm.
- 8) The resin of claim 1, wherein said polyester is made by the polycondensation of diols and diacids; said diols are ethylene glycol, 1,3-propane diol, 1,4- butane diol or 1,4-cyclohexanedimethanol; and said diacids are terephthalic acid, isophthalic acid and 2,6-naphthoic acid.
- 9) The resin of claim 8, wherein said polyester is polyethylene terephthalate, or a copolyester of polyethylene terephthalate with up to 20 wt-% of isophthalic acid or 2,6-naphthoic acid, and up to 10 wt-% of diethylene glycol or 1,4-cyclohexanedimethanol .
- 10) The resin of claim 8, wherein said polyester is polybutylene terephthalate, or a copolyester of polybutylene terephthalate with up to 20 wt-% of a dicarboxylic acid, and up to 20 wt-% of ethylene glycol or 1,4-cyclohexanedimethanol.
- 11) The resin of claim 8, wherein said polyester is polyethylene naphthalate, or a copolyester of polyethylene naphthalate with up to 20 wt-% of isophthalic acid, and up to 10 wt-% of diethylene glycol or 1,4-cyclohexanedimethanol.
- 12) The resin of claim 1, wherein said polyamide is nylon 6 or nylon 66.
- 13) The resin of claim 1, wherein said cyclic anhydride has a melting point of less than about 100° C.

- 14) The resin of claim 1, wherein said additive is selected from the group of colorants, anti-slip agents, flame retardants, antioxidants, gas (oxygen and carbon dioxide) barrier agents, oxygen scavengers, ultraviolet (UV) radiation absorbers, acetaldehyde reducing agents, crystallization control agents, impact modifiers, catalyst deactivators, melt strength enhancers, anti-static agents, lubricants, chain extenders, nucleating agents, solvents, fillers, plasticizers, and a mixture of two or more of these.
- 15) A method of producing a resin for making sheets, films, fibers and containers, comprising: blending a cyclic anhydride with an additive to form a mixture, and reacting said cyclic anhydride in said mixture with polyester or polyamide. ✓
- 16) The method of claim 15, wherein said cyclic anhydride is selected from the group of succinic anhydride, substituted succinic anhydride, glutaric anhydride, substituted glutaric anhydride, phthalic anhydride, substituted phthalic anhydride, maleic anhydride, and substituted maleic anhydride.
- 17) The method of claim 16, wherein said substituted succinic anhydride is selected from the group of methyl succinic anhydride, 2,2-dimethyl succinic anhydride, phenyl succinic anhydride, octadecenyl succinic anhydride, hexadecenyl succinic anhydride, eicosodecenyl succinic anhydride, 2-methylene succinic anhydride, n-octenyl succinic anhydride, nonenyl succinic anhydride, tetrapropenyl succinic anhydride, dodecyl succinic anhydride, and mixtures of these.
- 18) The method of claim 16, wherein said substituted glutaric anhydride is selected from the group of 3-methyl glutaric anhydride, phenyl glutaric anhydride, diglycolic anhydride, 2-ethyl 3-methyl glutaric anhydride, 2,2-dimethyl glutaric anhydride, 3,3-tetramethylene glutaric anhydride, and mixtures of these.
- 19) The method of claim 16, wherein said substituted phthalic anhydride is selected from the group of 4-methyl phthalic anhydride, 4-t-butyl phthalic anhydride,

tetrahydrophthalic anhydride, hexahydrophthalic anhydride, and mixtures of these.

- 20) The method of claim 16, wherein said substituted maleic anhydride is selected from the group of 2-methyl maleic anhydride, 3,4,5,6-tetrahydrophthalic anhydride, 1-cyclopentene-1,2-dicarboxylic anhydride, dimethyl maleic anhydride, diphenyl maleic anhydride and mixtures of these.
- 21) The method of claim 15, wherein the amount of said cyclic anhydride is from about 100 to 10,000 ppm.
- 22) The method of claim 15, wherein said polyester is made by the polycondensation of diols and diacids; said diols are ethylene glycol, 1,3-propane diol, 1,4- butane diol or 1,4-cyclohexanedimethanol; and said diacids are terephthalic acid, isophthalic acid and 2,6-naphthoic acid.
- 23) The method of claim 22, wherein said polyester is polyethylene terephthalate, or a copolyester of polyethylene terephthalate with up to 20 wt-% of isophthalic acid or 2,6-naphthoic acid, and up to 10 wt-% of diethylene glycol or 1,4-cyclohexanedimethanol.
- 24) The method of claim 22, wherein said polyester is polybutylene terephthalate, or a copolyester of polybutylene terephthalate with up to 20 wt-% of isophthalic acid or 2,6-naphthoic acid, and up to 20 wt-% of ethylene glycol or 1,4-cyclohexanedimethanol.
- 25) The method of claim 22, wherein said polyester is polyethylene naphthalate, or a copolyester of polyethylene naphthalate with up to 20 wt-% of isophthalic acid, and up to 10 wt-% of diethylene glycol or 1,4-cyclohexanedimethanol.
- 26) The method of claim 15, wherein said polyamide is nylon 6 or nylon 66.

- 27) The method of claim 15, wherein said additive does not react with said cyclic anhydride.
- 28) The method of claim 15, wherein said additive is selected from the group of colorants, anti-slip agents, flame retardants, antioxidants, gas (oxygen and carbon dioxide) barrier agents, oxygen scavengers, ultraviolet (UV) radiation absorbers, acetaldehyde reducing agents, crystallization control agents, impact modifiers, catalyst deactivators, melt strength enhancers, anti-static agents, lubricants, chain extenders, nucleating agents, solvents, fillers, plasticizers, and a mixture of two or more of these.
- 29) The method of claim 15, wherein said cyclic anhydride has a melt point of less than about 100°C.
- 30) The method of claim 15, wherein said cyclic anhydride has a melt point of less than about 25°C.
- 31) The method of claim 15, wherein said resin is injection molded into sheets, films, fibers, containers and preforms and containers therefrom.
- 32) An injection molded article such as sheets, films, fibers, containers, and preforms and containers therefrom made from a resin comprising the reaction product of either polyamide with cyclic anhydride or polyester with cyclic anhydride, wherein said reaction product also contains an additive.
- 33) An injection molded article such as sheets, films, fibers, containers, and preforms and containers therefrom made from a resin comprising the reaction product of either polyamide with cyclic anhydride or polyester with cyclic anhydride, wherein said reaction product also contains an additive, wherein said cyclic anhydride has a melt point of less than about 100° C.